

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

1922.

- June 1 Entries close for Schneider Cup Race
 June 5 R.Ae.C. Whitsun Race Meeting, at Waddon
 June 23-25 International Competition for Touring Aero-planes, Brussels
 July 6-20 French Gliding Competition
 Aug. 6 Gordon-Bennett Balloon Race, Geneva
 Aug. 7 R.Ae.C. Race Meeting, at Waddon
 Aug. (last fortnight) Schneider Cup Seaplane Race, at Naples
 Sept. Tyrrhenian Cup, Italy
 Sept. Italian Grand Prix
 Sept. or Oct. R.Ae.C. Race Meeting, at Waddon
 Sept. 22 Coupe Deutsche (300 kil.)

1923.

- Dec. 1 Entries Close for French Aero Engine Competition

1924.

- Mar. 1 French Aero Engine Competition.

INDEX FOR VOL. XIII.

The Index for Vol. XIII of FLIGHT (January to December, 1921) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1s. per copy. (1s. 1d. post free).

EDITORIAL COMMENT**Our
Future in
the Air**

WE are extremely glad to see that Brig.-Gen. P. R. C. Groves is returning, in the columns of *The Times*, to the vitally important question of our future in the air. It is by articles such as these that the layman, the man-in-the-street, is made aware of the true position, and it is by public pressure, and by public pressure only, that the Government may be persuaded to move at all. Past history shows this time after time, and this pressure, backed by a vast volume of public opinion, can best be initiated by such great daily newspapers as *The Times* and others, which reach the man who is not directly interested in aviation, but who is very directly interested in the safety of the Kingdom and of the Empire.

The previous series of articles by Gen. Groves dealt with the air policy of the Government during the three years since the Armistice. The present articles discuss the future policy of the Air Ministry, as foreshadowed by the Air Minister in the House of Commons, and by the Chief of the Air Staff, Sir Hugh Trenchard, in his inaugural address at the opening of the R.A.F. Staff College at Andover. This policy, as Gen. Groves interprets it, consists in maintaining a small regular Air Force, and in establishing a Territorial Air Force upon which to draw in case of emergency. Up till a very short time ago, Gen. Groves points out, we had no home defence against air attack, in the only form possible, i.e. a striking force of aircraft which, by being ready to attack at short notice the centres of any enemy who may contemplate an attack upon us, shall ensure that we are immune from such attack. It was not until, as Gen. Groves puts it, the Air Ministry "suddenly realising the obvious, resorted to panic measures and set aside three squadrons for the purpose," that anything was done, and even then, the three squadrons (totally inadequate to deal with

the problem) were obtained by taking away from the Army and Navy squadrons which were badly needed by these services for co-operative work.

In concluding his articles, Gen. Groves gets home with the very telling point that, as the Air Force is now admitted to be our first line of defence, it is futile to model it on military lines, with a small Regular and a, not very large, Territorial Force. Rather should we found our Air policy on the service which was, until comparatively recently, our first line of defence—the Navy, which was ever prepared for any eventuality, and not relying on a small Regular Force and a Territorial Force in reserve. The logic of this argument should be sufficiently obvious. And to maintain an aerial Striking Force capable of coping with any demand can only be done by close co-operation with, and the establishment of, a strong Civil Aviation. On any other basis this task would assume impracticable proportions, both financially and practically. By fostering Civil Aviation, on the other hand, such a Striking Force could be maintained at a relatively small expense to the taxpayer, as to a certain extent Civil Aviation could be made self-supporting, quite apart from the advantages which the possession of the most rapid means of communications would confer on the Empire.

The New Russo-German Air Route

It is a well-known fact that negotiations have been proceeding for some considerable time between the Soviet Government and German aircraft and financial circles, with a view to establishing German-operated air services between Berlin and Moscow. These negotiations have now been completed, and the German Aero Union combine have secured the rights to run this service. Not only so, but, possibly as a result of, or at any rate in close connection with, the recent Russo-German agreement of Genoa, these concessions are to be extended, and the combine has been granted exclusive rights to operate postal and passenger services between all the principal cities of Russia. The flying stock for these services will be built in factories erected on Russian soil, but financed and run by, it may safely be presumed, German capital and a large percentage of German personnel. At the best, this may—indeed, will—mean the extension of German air power and civil aviation right across Russia to the shores of the Pacific. At the worst—and not at all an unlikely supposition—it may mean the establishment of a huge civil aviation industry, nominally Russian but in reality dominated by Germany, which would form a potential “striking force,” much of the character as that for which Gen. Groves pleads so strongly in his articles. And how are we to prevent it? So long as the machines are built in Russia and other countries, it would appear that we are powerless to stop construction on any scale which Germany may choose, and for which she is capable of paying. For that matter, what guarantee have we that she will not establish factories in Denmark, Sweden, Norway and Holland, as well as in Russia, ostensibly for the purpose of operating commercial air services to these countries, but forming a force which, in time of need, could quickly be massed on any frontier and used against any enemy. In this connection it is significant to recall the words of Gen. Ludendorff who, in 1920, advocated a treaty such as

that now concluded between Germany and Bolshevik Russia, as a means “to destroy the consequences of our defeat and realise in the near future the idea of revenge.” It does not require a great deal of imagination to visualise what might happen, and in the meantime we are carrying on with a pitiful “home defence” against air attack of three squadrons! One begins to realise that France, by keeping a strong Air Force and constantly adding to it, is playing for safety. She does not complain that she cannot afford it. She sees in it a form of insurance against aerial aggression, and pays the premium. An aerial defence, to be of any value, must be ready at a moment's notice. In the next war no time will be lost by the enemy. The first act of hostility will be an air attack, launched on a stupendous scale and directed against a number of points. The only defence is one which is always ready, not one which has to call up reserves, train personnel, etc. Are we ready to take our place under such a contingency? The answer is an emphatic NO.

The Atlantic Flight

The magnificent performance of the two gallant Portuguese officers, Capt. Cabral and Capt. Coutinho, in flying from Lisbon to St. Paul's Rocks, deserves to rank high among the historical flights of the years after the war. With a minimum of organisation, and in spite of extremely unfavourable weather conditions, they have managed the most hazardous portion of their journey, and have succeeded in covering the longest non-stop distance entailed in the trip. That they should have come to grief after getting thus far is an unkindly blow of fate, but it appears probable that a fresh machine will be despatched, and that they may thus be able to complete their journey by air in the manner contemplated.

The fact of having been able to locate St. Paul's Rocks, which are visible at no great distance, and which are of quite minute extent, is a feat of navigation of which Capt. Coutinho may well be proud, and for which he deserves the very highest credit.

To British aviation the flight is of the greatest importance, in having shown once more the superiority of British aircraft and British engines for work of this nature. Our only regret is that the crew of the machine were not also British. Most of the world's long-distance flights have been made by British crews in British machines, engined by British power plants, and it would have been desirable that in this instance also the daring adventures should have been of our race. However, both officers are of a nation which has been for centuries our ally, and with which we still have the very closest relations, and we can therefore view without jealousy their splendid achievement. Our heartiest congratulations to them, to the Fairey Aviation Company, the builders of the machine, and to Rolls-Royce, Ltd., whose engine carried them to St. Paul's Rocks.

Transatlantic Airmen Honoured

THE two Portuguese airmen, Capt. Cabral and Capt. Coutinho, have arrived at the Brazilian island of Fernando do Noronha, where they had a brilliant reception.

President Pessoa has sent a cordial message of congratulation to them, offering any assistance which the Brazilian Government can render.

The two airmen have been awarded the Portuguese military Order of the Torre e Espada. The cruiser “Carvalho de Araujo” will leave Lisbon shortly with a new seaplane for the completion of the flight to Rio de Janeiro.

THE HANDLEY PAGE W.8B

Two Rolls-Royce "Eagle" Engines

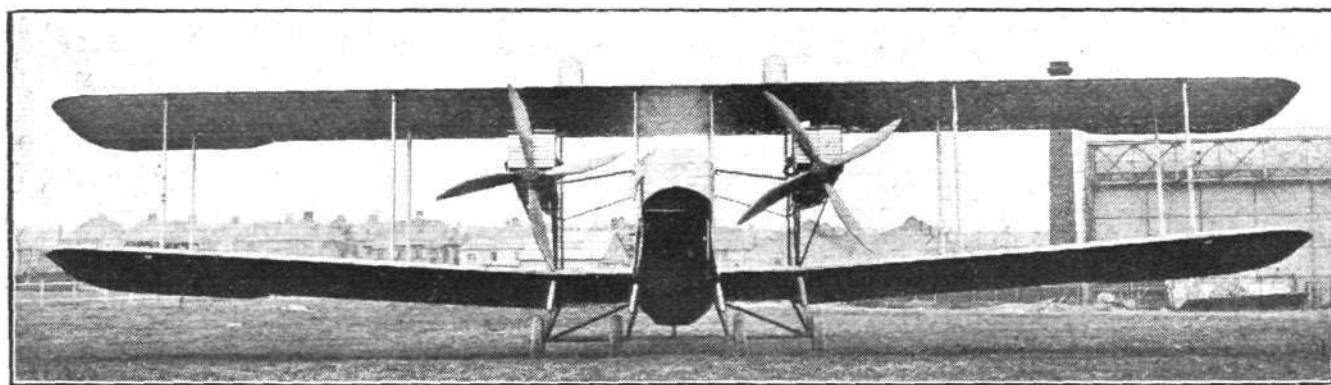
THE first of the new Handley Page W.8B commercial machines, general arrangement drawings and preliminary description of which appeared in our issue of January 19, 1922, is now completed, and will, by the time these notes appear, be at Martlesham, undergoing its type tests. As soon as these are completed, which should be in about one week's time, the machine will be put on the London-Paris service, where it will gradually supplant the o/400 type, which, although it has done excellent work, is scarcely to be considered an up-to-date passenger machine.

The W.8B is, generally speaking, similar to the machine which won the Air Ministry Competition at Martlesham, with the exception that it is fitted with engines of lower power. The present power plant consists of two Rolls-Royce

can be reached and attended to is a very great point in favour of the uncovered engine. Enclosing an engine entirely looks neat, and has, undoubtedly, great aerodynamic advantages, although, as has just been pointed out, not perhaps as great as might be imagined at first sight, owing to the very complicated question of cooling. At any rate, the ground engineers will appreciate the uncovered engine, and an engine which is easy to get at is more likely to be well looked after than is one which is so tucked away in its cowling as to be almost inaccessible.

The Petrol System

The petrol system of the W.8B is of the simplest possible, i.e., direct gravity feed from tanks placed on top of the



THE HANDLEY PAGE W.8B : Front view.

"Eagle" engines, mounted on a structure of steel tubes between the wings. Certain modifications have been carried out with regard to the details of the structure, although, in general, it resembles that of the older machine. The main alteration, apart from questions of dimensions, has been caused by the placing of the petrol tanks on the top plane, instead of in a streamline tail piece behind the engine. As shown in the accompanying illustrations, the Rolls-Royce engines are left entirely uncovered, a feature which is rarely seen on modern machines. After making very careful

top plane. There should, therefore, be very little chance of trouble with the petrol system, quite apart from the fact that a very considerable saving in weight has been made possible by the adoption of the gravity feed system. It is interesting to note in this connection that, by doing away with pressure petrol feed, and by omitting the gear for folding the wings, a saving in weight of 500 lbs. has been effected. As this is equivalent to three passengers of average weight, or at any rate to two passengers with a fair amount of luggage, this saving becomes of very considerable import-



THE HANDLEY PAGE W.8B : Three-quarter rear view.

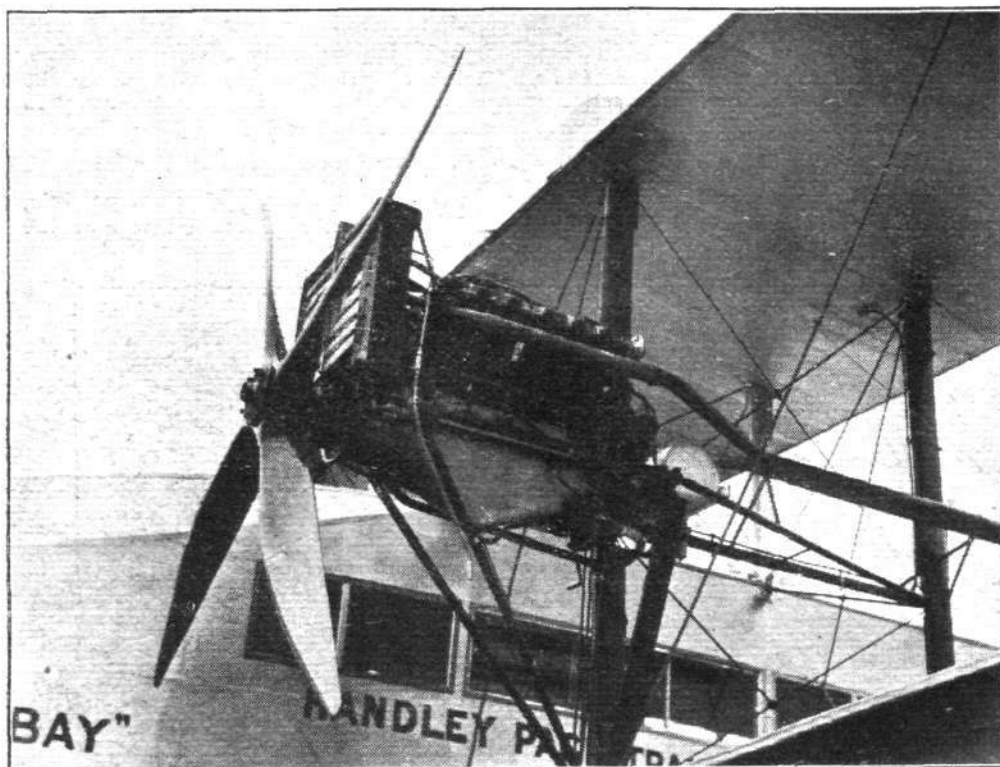
estimates, however, the designers have come to the conclusion that, by the time the weight of cowling had been added, and considering the extra complication and difficulty of getting at the engines, the gain would have been so small that it has been considered better to leave the engines bare. It should be remembered that one result of this is that smaller radiators can be fitted, as a goodly portion of the heat is carried away from the engine direct when exposed to the air current. Also, from the point of view of running the machines in service, the ease with which all parts of the uncovered engines

ance, as it results in an increase in earning capacity of £13 to £20 per trip between London and Paris. In the course of a year, this should amount to a considerable sum, and as the arrangement has the further great advantage of a simplified and more reliable petrol system, the change appears to have been distinctly worth while.

The petrol tanks, as already mentioned, are mounted on top of the top plane, and pipes run down to the engines along the inter-plane struts. Very large filters are incorporated in the system, so that there should be practically no chance

of a choked petrol feed. Metal piping is used, with the new Air Ministry metal coupling about which the Director of Research spoke so highly in one of his lectures before the Royal Aeronautical Society. The oil tanks are mounted behind the engines, as may be gathered from our illustrations. Silencers of a simple type are fitted, consisting of long steel tubes with slots. The two branch pipes from right and left hand cylinder banks meet behind the engines and exhaust

The instruments, of which a fine equipment is carried, are mounted on a dash in front of the pilot in such a manner as to be easily visible. On the extreme left is the reel for winding up the wireless aerial. Then follow, going from port to the starboard side, Smith's thermometers, petrol capacity gauges and air-speed indicator. A Short and Mason altimeter and an Aero Turn Indicator (Ogilvie Pressure gauge) are mounted towards the starboard side, and on



View of the mounting of one of the Rolls-Royce "Eagle" engines in the Handley Page W.8B.

into the single silencing pipes. It is now quite easy to carry on conversation in the cabin, and in this respect the W.8B is a great improvement on the o/400's.

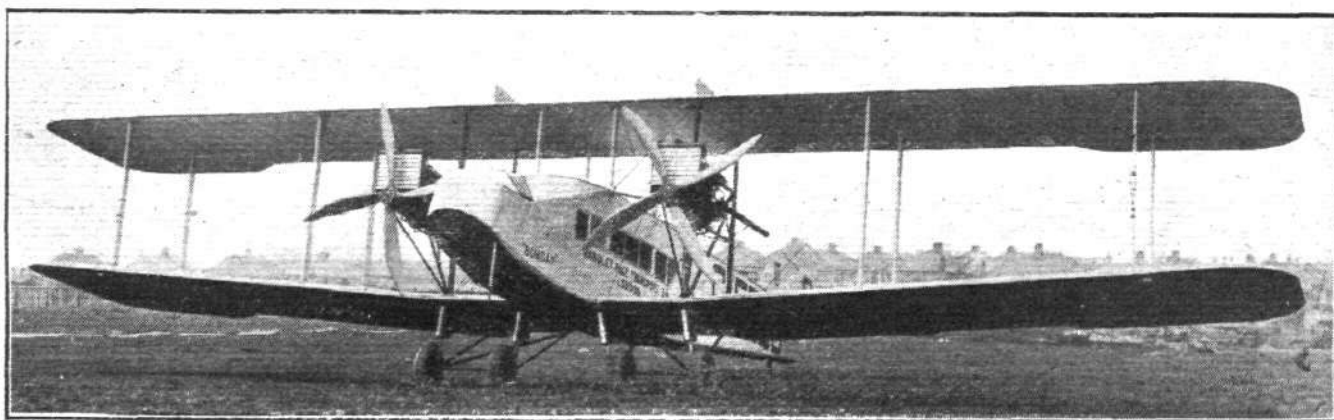
The Pilot's Cockpit

There is one point about the design of a commercial aeroplane which, in spite of recent efforts, is not always given the consideration which it deserves. We refer to the view from the pilot's cockpit. In this respect, whatever may be the case in others, the twin-engined machines score over the single-engined type. No matter how one arranges the pilot in a single-engined aeroplane, his views in certain directions must necessarily be obstructed by the engine. In the twin-engined type, on the other hand, the pilot can be, and usually is, placed in the extreme nose of the fuselage, whence his view is to all intents and purposes, unobstructed in all directions that matter. In the Handley Page W.8B the view from the pilot's cockpit is exceptionally good, as normally he can see straight ahead and, by craning his neck a little, he can see over the nose of the fuselage and to the left.

the extreme right, set back into a niche, is the Campbell-Bennett aperiodic compass. The placing of the compass has been well thought out, as it is easily seen after a very small movement of the pilot's head, assuming him to be seated normally with his head a little to the right, looking over the starboard edge of the cockpit. The front covering of the fuselage is so hinged that the ground engineer can get at the back of the instrument board very easily, which is a great advantage from a practical point of view. The revs. counters and oil pressure gauges are mounted on the inner side of the engines, and have large dials which can be easily read from the cockpit.

The Controls

The controls are of usual type, with a foot bar for the rudder and wheel for elevator and ailerons. The engine controls, as already mentioned, are taken along the outside (starboard) of the fuselage, and are enclosed in a casing, those to the port engine running across under the floor of the cabin. The controls for shutting off oil and petrol have knobs of red fibre, and a large lever is provided to the right of the pilot's seat, by means of which, in case of emergency,



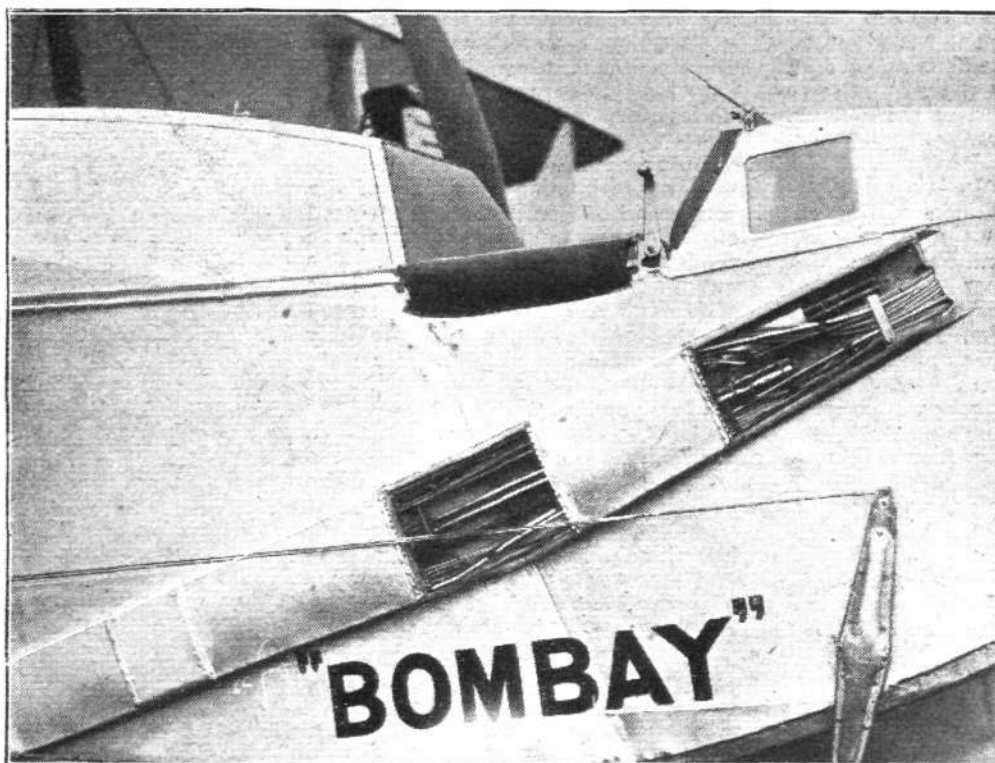
THE HANDLEY PAGE W.8B : Three-quarter front view.

the pilot can shut off both tanks simultaneously. The switches, which are mounted on the dash, are to be connected up by a short wooden rod so that both engines may be switched off in an instant in case of trouble.

Behind the pilot's cockpit, between it and the cabin, is a small compartment in which the wireless instruments are installed. The lower portion of this compartment is also used for luggage, there being a separate door in the port side of the fuselage, in addition to those communicating with

allow a man easily to climb through them. There is also an emergency ripping panel in the roof. Fresh air, apart from any that may enter through opened windows, enters through a scoop in the roof of the cabin, via a diffuser box, and the used air escapes through a duct, also in the roof, but placed near the after-end. At present, no provision has been made for heating the cabin, but as the machines will first be used during the summer, there is probably no great need for heating. In the autumn, should it prove

The Handley Page W.8.B : All engine controls, etc., are carried along the starboard side of the fuselage, and are enclosed in a casing having detachable covers at intervals.



the cabin and pilot's cockpit. This compartment may be loaded up to the extent of 6 cwt., that aft of the cabin being of similar maximum capacity.

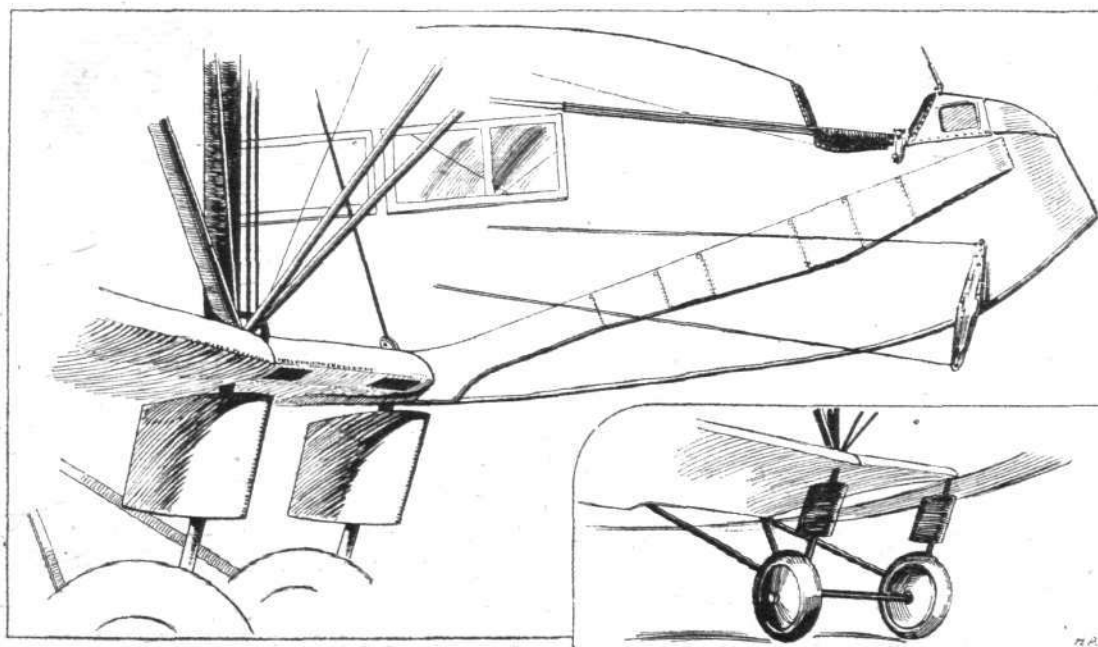
Passenger Accommodation

The cabin, which has seating accommodation for 12 passengers, is large and well lighted by large windows in the sides. These are of the famous Triplex, non-splintering type, and the second and third on each side are made to open by sliding, so that the cabin may quickly be aired should the passengers find the need for so doing. In addition to the function as ventilators, the windows would form excellent emergency exits, as they are sufficiently large to

necessary, it should be a comparatively simple matter to heat the cabin from the exhaust.

The passengers' seats, as indicated in one of our sketches, are of wicker work, and very comfortable. There is reasonably ample leg room, and it is possible for a passenger of average height to stretch his legs without leaving his seat. As notices displayed in the cabin state that passengers may get up and move about, it should be possible to make the journey between London and Paris without experiencing undue fatigue.

On the front wall of the cabin are mounted three instruments for the information of passengers: clock, altimeter and air speed indicator. Also a rack with two tumblers, and on the



The Handley Page W.8.B : All engine controls are carried on the starboard side of the fuselage, and are enclosed in a casing, as shown. Inset shows, diagrammatically, one of the under-carriages.

side a container with drinking water. There only remains the push button by the side of each seat for summoning the waiter, but possibly these will come in due course.

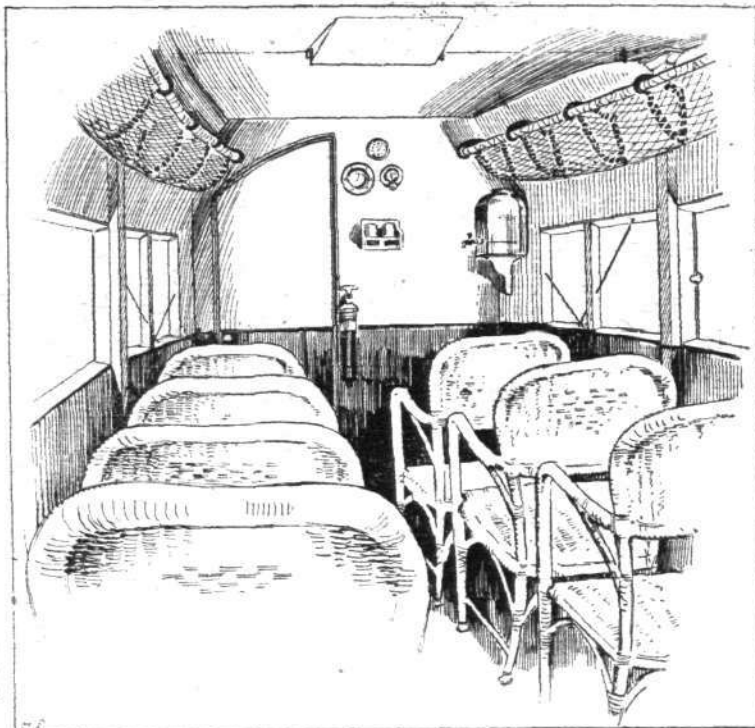
While on the subject of the cabin, it is of interest to mention that the view, considering that the machine has twin engines, is exceptionally good, owing to the fact that the engines are mounted fairly high in the gap, and forward of the leading edge of the lower plane. Thus the view laterally is far less restricted than one would expect in a twin-engined machine.

The lavatory is placed at the after-end of the cabin, and the door arrangement of it is one of the neatest we have seen. When the machine is on the ground and the outer door open, the lavatory door closes back and shuts off only a small triangle of the lavatory, while, when the machine is in the air and the outer door is closed, the door closes the end of the cabin and the lavatory extends right across the fuselage.

The Undercarriage

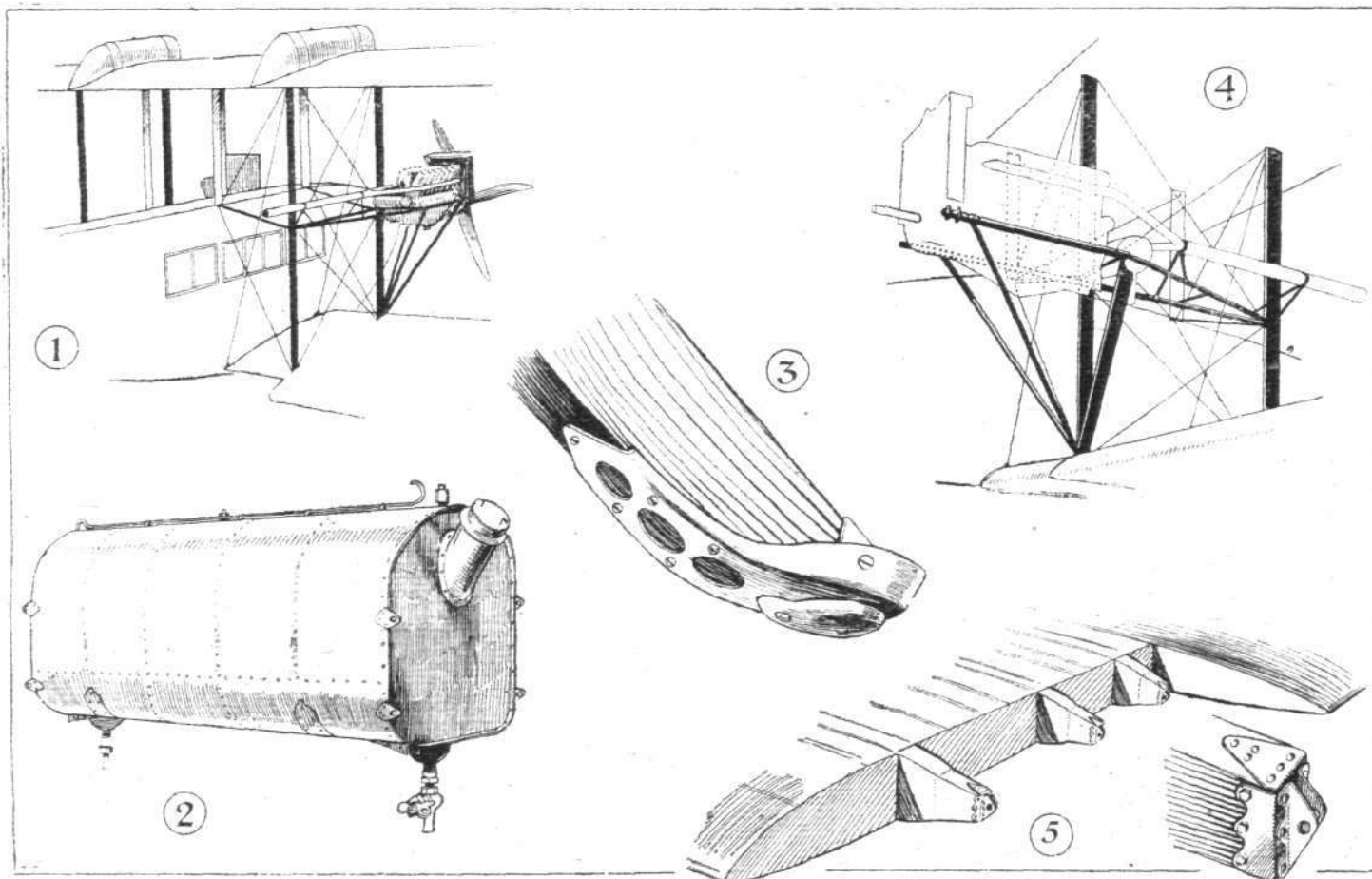
In the main, the undercarriage is similar to that of the W.8, consisting of two Palmer wheels on each side, strutted to the lower longeron of the fuselage and to the interplane and engine struts respectively by telescopic tubes. The rear "legs" of the Vees are braced by a diagonal tube. Thus each undercarriage consists of two wheels and five struts. The whole looks very simple and strong, and is probably of as low resistance as it is possible to get an undercarriage with four wheels. Universal joints are incorporated in the struts wherever movement occurs, so that in case of the machine being slightly listed, or one wheel striking a rut, the framework can "give." The tail skid is a substantial ash member, with an easily renewable metal shoe of the shape shown in one of our sketches.

Such features of the machine as wing plan and arrangement, tail planes, etc., were shown in the scale drawings published in our issue of January 19, 1922, and as they are of orthodox design they do not call for any special reference here. The machine is, of course, a biplane, with the lower plane set at



View inside cabin of Handley Page W.8 B.

The following figures, obtained on tests at Cricklewood by the makers, may, however, be regarded as approximately correct. Maximum speed, 104 m.p.h.; landing speed, 50 m.p.h.; maximum speed at 5,000 ft., 101 m.p.h.; ground rate of climb, 550 ft. per minute; service ceiling, 10,000 ft.



SOME DETAILS OF THE HANDLEY PAGE W.8 B : 1, Mounting of petrol tanks on top plane. 2, Sketch showing one of the petrol tanks. 3, The metal shoe on the tail skid. 4, Diagrammatic view of port engine mounting. 5, Details of mounting of balanced ailerons.

a large dihedral angle, and has a monoplane tail of very characteristic outline, especially as regards fin and rudder. The tail plane is of the trimming type, and is operated by a handle mounted on the starboard side of the pilot's cockpit.

As already mentioned, the first of the W.8B's, the G-EBBG, is going to Martlesham for type tests. Official performance figures are not, therefore, available as yet.

The weight of the machine empty is 7,200 lbs., and the total loaded weight, 12,000 lbs. The load is composed as follows : Petrol for 3½ hours (137 gallons), 1,000 lbs (normally the machine would use approximately 100 gallons on the trip, leaving a safe margin for emergency) ; oil (10 gallons), 100 lbs.; pilot, 160 lbs.; 12 passengers at 180 lbs.; 2,160 lbs.; and approximately, 12½ cwt. of cargo, 1,380 lbs.

THE LISBON TO RIO TRANSATLANTIC ATTEMPT

Flight Delayed by Mishap

A MISHAP in alighting on a rough sea has resulted in temporarily postponing the completion of the splendid flight undertaken by Capt. Sacadura Cabral and his navigator, Capt. Gago Coutinho, in a Fairey seaplane, Rolls-Royce "Eagle" engine. It appears that in alighting near St. Paul's Rock the machine was badly damaged in the rough sea, and that unless another machine, or at any rate spare parts such as floats, etc., be sent, the flight will have to be abandoned. We learn, however, that one or the other is to be sent, and that the gallant officers will thus be able to continue the flight so splendidly begun, with, let us hope, better success.

It may not be without interest to summarise briefly the facts relating to the first stages of the flight. Leaving Lisbon on March 30, at 6.55 a.m., the "Lusitania," as the machine has been christened, arrived at Las Palmas, Canary Islands, at 3.30 p.m., having covered a distance of approximately 900 miles in 8½ hours. Unfavourable weather conditions prevented a start being made until April 2, when, the weather moderating a little, the machine got away. It had not, however, proceeded far before the weather again became very bad, and the machine had to come down in the bay of Gando. It was some little time before news of the machine reached this country, and some anxiety was beginning to be felt, although it was generally hoped that the Fairey would be able to weather the storm. A couple of days were now spent waiting for the weather to improve, and on April 4 another start was made at 8.30 a.m., the machine reaching St. Vincent, Cape Verde Islands, after a flight of about 10 hours' duration.

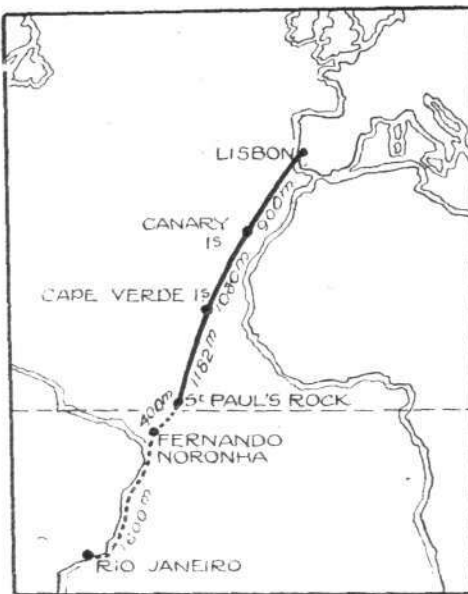
A period of tempestuous weather, quite unusual for this time of the year, delayed the "Lusitania" at the Cape Verde Islands until April 17, when the machine was flown from St. Vincent to Santiago, another island of the Cape Verde group. The next morning, before dawn, a start was made from Santiago, and the machine commenced its longest trip, to Fernando Noronha, a small island off the

Brazilian coast. It was realised that difficulty might be experienced in reaching Fernando, and a Portuguese man-of-war had been stationed at St. Paul's Rock, a very small piece of rock situated almost on the line and in approximately 29° west longitude. It will easily be realised that to have "made" this tiny rock in the wastes of the Atlantic Ocean must have required no mean navigational skill, and it is to the credit of Capt. Coutinho that he succeeded in guiding the machine so unerringly. A slight miscalculation might easily have resulted in the loss of both machine and crew.

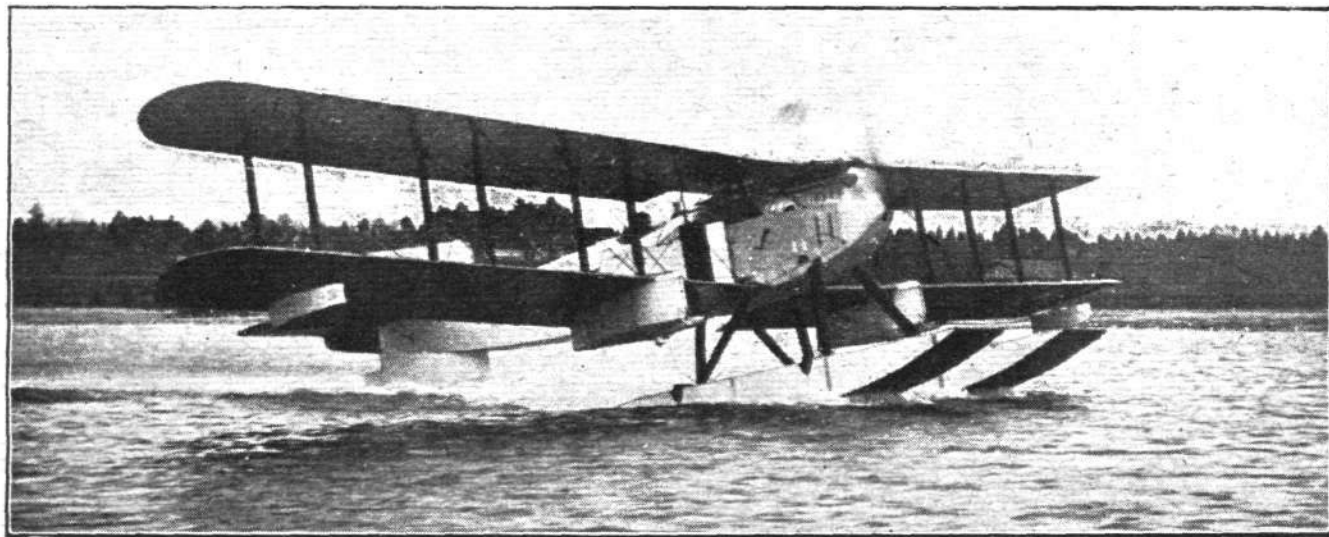
The reports dealing with the facts which led to the wreck of the machine at St. Paul's are somewhat vague, but it appears that in alighting the floats were damaged, a high sea running at the time. Presumably it was found that the petrol was running short, and it was then decided to alight, in order to take on board fresh supplies from the Portuguese vessel stationed at the rock. That the machine should have been damaged is greatly to be regretted, but it is hoped that the remainder of the trip may be completed without accident as soon as the necessary spares, or a fresh machine, can be sent out.

In the meantime, what has already been accomplished is a very fine performance indeed, and deserves to rank among the historical flights of the world. It is a credit not only to the pilot, and, especially, the navigator, but also to the machine and engine. The Fairey seaplanes have established an enviable reputation for robustness and long life, and the Rolls-Royce engines already have to their credit such flights as the London to Australia, Cairo to the Cape, flight across the Atlantic

(non-stop), etc. Thus the British aircrafts industry cannot fail to benefit from such a splendid performance, even if the crew of the machine are not British. We are certain that no one, least of all British pilots and navigators, will be grudging in their praise of what has already been accomplished, and that all will join us in wishing the two gallant Portuguese officers every success on the last stages of their memorable flight.



The Lisbon-Rio Flight: Sketch map of the route. The distances marked are approximate only.



The Lisbon-Rio Flight: The Fairey seaplane "Lusitania," Rolls-Royce "Eagle 8" engine, taxiing.

London's War Scars

THE scars that London received during the air raids are rapidly healing, and there will soon be few of these historic marks left. Such as these are, are treasured as honourable wounds, but none more so than those caused by the bomb which fell at the base of Cleopatra's Needle, which itself was slightly chipped. The Sphinxes were hit in several places and the paving torn up, but when it was

repaired such stones as were not hopelessly damaged were carefully replaced, and thousands have visited the spot to look with interest at the scars. Men have recently been at work on the pavement, and fear was felt that these damaged stones would disappear, but the authorities had no such vandalistic ideas, and, after re-bedding, the stones have been laid again in their former position. So Londoners will still be able to show each other these marks."—(Morning Post).

MEMORIAL SERVICE TO SIR ROSS SMITH AND LIEUTENANT BENNETT

VERY impressive was the Memorial Service for Capt. Sir Ross Smith and Lieut. J. M. Bennett, on April 20, at The Sanctuary of Australia House—St. Clement Danes—when the sacred edifice was very beautifully decorated with Easter lilies and other flowers. Sir Keith Smith and members of every branch and rank of the R.A.F. were there to pay a last honour to the two famous aviators, and a vast assembly of friends and sympathisers filled the church to overflowing. Many officials of the Australian Commonwealth and of the Australian community in London being present. The special service was conducted by the Rev. W. Pennington-Bickford, Rector; the lessons were read by the Rev. Henry Howard (South Australia); Mr. Arthur Mason (late organist, Sydney Town Hall) was at the organ, and the central band of the Royal Air Force, under Flying Officer J. Amers, was present; its buglers, after the blessing, sounded the Last Post; and the band played the Dead March in "Saul" and the Hallelujah Chorus.

Towards the end of the service the Rev. H. D. L. Viener, Chaplain-in-Chief to the R.A.F., gave a short address, in which he paid a high tribute of admiration to the dead pilots.

"A Masonic Prayer," on the Passing of a Brother, by Louie Pennington-Bickford, concluded the great tribute of sympathy and sorrow accorded to the men who had been so suddenly taken from us.

Besides Sir Ross' brother, Sir Keith Smith, amongst those who attended the Service were Mr. George W. Chamberlain, cousin, and Mr. and Mrs. R. E. Brindley, uncle and aunt of Lieut. Bennett. The congregation included: Brig-General E. P. Trotter, representing the Prince of Wales; Lord Gorrel (Under-Secretary for Air) and Sir W. H. G. Salmond (Director-General of Supply and Research), representing the Air Ministry; Air-Marshal Sir H. M. Trenchard, Chief of the Air Staff; Major-General Sir Frederick Sykes, Colonel Stuart Sankey, representing the Lord Mayor, and Colonel Hogben, representing the High Commissioner for Australia.

Messrs. Vickers, Ltd., were represented by Mr. Douglas Vickers, M.P. (Chairman), Commander Sir Trevor Dawson, Sir Vincent Caillard, Lieut.-Colonel W. C. Symon, Mr. Percy Grant, and Mr. W. F. Sadler; while on behalf of the Aviation Department of the firm there were present Capt. H. E. P. D.

Acland, Brig.-General W. D. Caddell, Mr. Percy Maxwell-Muller, Mr. R. K. Pierson, Capt. S. Cockerell, and Capt. F. C. Broome.

Lord Wodehouse, representing Mr. Churchill, Capt. the Hon. F. E. Guest, M.P., Secretary of State for Air, Air Vice-Marshal Sir J. M. Salmond, Col. the Hon. Sir James Allen, the High Commissioner for New Zealand, Sir Harry Brittain, representing Messrs. Napier and Sons, Mr. A. H. Ashbolt, Agent-General for Tasmania, the Hon. John McWhae, representing the Agent-General for Victoria, Maj.-Gen. Sir Sefton Brancker, Mr. Patrick Alexander, representing the Aeronautical Society.

Lieut.-Col. F. K. McLean and Lieut.-Comdr. H. E. Perrin, representing the Royal Aero Club, Mr. Andrew Fisher, ex-High Commissioner for Australia, Capt. A. S. Littlejohns, C.M.G., the Naval representative for Australia, Air Vice-Marshal J. F. A. Higgins, Air Vice-Marshal A. V. Vyvyan, Air Commodore O. Swann, Air Commodore F. R. Scarlett, Air Commodore H. R. M. Brooke-Popham, Air Commodore C. L. Lambe, Air Commodore J. M. Steele, Air Commodore C. A. H. Longcroft, Brigadier-General R. K. Bagnall-Wild, Air Commodore F. C. Halahan, Mr. John Cates, Colonel Beatty, Mr. F. Fisher, representing Sir Charles Wakefield, Mr. J. L. Jones, representing Lloyd's, Mr. C. G. H. Winter (Napier Aviation Depot), etc., etc.

On Saturday, April 22, a special service was also conducted at Messrs. Vickers, Ltd., Weybridge Works. Here were gathered together in grief for the men they had known, loved and so much respected, the employees and others associated with the actual construction side of Messrs. Vickers' Aviation Works. Some 700 or 800 workers, in addition to the Management Staff and Head Office representatives, were present and the associations of the scene added to the sincerity and pathos of the ceremony. It was at these Works that the machine was constructed in which Sir Ross Smith and Lieut. Bennett lost their lives, and also the aeroplane upon which was accomplished the great Australian flight, as well as the machine upon which the late Sir John Alcock and Sir A. Whitten Brown—who was at the service on Saturday—made their historic Atlantic crossing. And, finally, the service was conducted within a few hundred yards of the spot of the disaster. The surroundings were a fitting frame to the solemn ceremony.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN APRIL 16 AND APRIL 22, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
			Mails	Goods				
Croydon-Paris ...	44	38	13	33	44	h. m. 2 32	D.H. 4a G-EAWH (1h. 46m.)	B. (4), Br. (1), D.H. 4 (2), D.H. 9 (1), D.H. 18 (2), D.H. 34 (1), G. (8), H.P. (1), Sp. (1), V. (1).
Paris-Croydon ...	42	105	6	24	39	3 24	D.H. 4 G-EAMU (2h. 7m.) ...	B. (7), Br. (1), D.H. 4 (2), D.H. 18 (2), D.H. 34 (1), G. (6), H.P. (1), Sp. (1), V. (1).
Croydon-Rotterdam-Amsterdam.	5	5	2	5	5	4 44	Fokker H-NABK (4h. 3m.)	F. (4).
Amsterdam-Rotterdam-Croydon.	6	7	6	6	5	4 55	Fokker H-NABK (3h. 41m.)	F. (5).
Totals for week ...	97	155	27	68	93			

* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H. 4 = De Havilland 4, D.H. 9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. R. = Rumpler. Sa. = Salmson. Se. = S.E. 5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Daimler Hire Ltd.; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

Berlin-Moscow Air Service

AN agreement has been signed between the Soviet Government's representatives and the German Aero Union for the formation of a company with the object of

establishing an air service between Berlin and Moscow. The service is to be postal only at first, with three flights weekly each way, and it is hoped to do the journey within twenty-four hours.

LONDON TERMINAL AERODROME

Monday evening,

April 24

A FRESH newspaper service to Paris has been started this week. *The Times* have chartered a special machine from the Instone Air Line which is scheduled to leave at 6 a.m. each day. Morning mist has interfered with this, and other morning services to some extent, but on the whole these early-morning services are quite good for the time of year.

The K.L.M. re-started their service between London and Amsterdam on Tuesday, and are already beginning to get back some of their parcels' traffic, which was the chief feature of this service last year. Several Dutch journalists have made the air journey during the week, and were keenly interested in all they saw at Croydon, being much impressed with the arrangements and the general air of activity.

The Fokker monoplanes have been overhauled during the winter. New compass-mountings have been provided, and the interference which was caused by the old steel "joy-stick" has been eliminated by the fitting of a non-magnetic one. Each monoplane has also been provided with an emergency exit in the roof, which is opened by pulling two straps, and gives access to the top of the wooden wing. The emergency exit, however, seems only to have been designed for slim people. A stout passenger would certainly be in trouble if he had occasion to use it. Once out on the top, ropes are provided for stranded passengers to hang on by, as it is calculated that the wing would float like a raft.

All the pilots on the K.L.M. service are now of Dutch nationality, and Messrs. Hofstra and Geysendorfer, who flew on the service last year, are bringing the new pilots across as passengers to enable them to get used to the route. Mr. Van der Hoop made his first trip as pilot during the week and, on arriving at Croydon, had to land down the slope of the aerodrome into a north wind. Even pilots with plenty of experience of Croydon find this a ticklish job at times, and Mr. Van der Hoop only just managed to avoid running into the Disposal Company's hangars. Other new pilots on the K.L.M. service are Messrs. Warnaar, Silevis and Pyl.

Fixed "Air Roads" to Paris

SEVERAL meetings of pilots have been held during the week to attempt to select definite routes on the London-Paris airway, and certain suggestions have been submitted to the Air Ministry as the result of these meetings. The stretch of railway between Oxted and Ashford was suggested as one section of the route on the British side, while in France the railway from Etaples to Abbeville, and the main road from Abbeville to near Le Bourget, were considered the best guides. It was also suggested that, in addition to the rigid observance of the rule "Keep to the right," pilots who did not wish to fly along this route should keep at least a mile away from it, and also maintain a sharp look-out.

The usual spring disturbance of the aerodrome has begun. Throughout the winter, when there is little traffic, the whole of the landing-ground is free from obstruction; but as soon as traffic begins to "boom," and machines are constantly arriving and departing, workmen swarm over the 'drome, and stick up obstruction flags until there has almost to be a committee meeting of pilots and managers, before the departure of every machine, to decide how these flags can be dodged. As to pilots coming in, it is surprising that they manage to land at all.

At present harrowing and rolling operations are being carried out, and "bumps" are also being levelled; while the petrol-filling points which are being constructed seriously handicap machines "taxying" up to the departure platform. More than one machine has damaged its under-carriage by sinking into a pipe-line trench which has been badly filled-in.

The New Handley Page "Express"

THE first of the Handley Page "W.8 B's" visited the aerodrome on Friday to pick up a new "prop," before

proceeding to Martlesham Heath for "type" tests. The machine appears to be very satisfactory, and lands at something under 45 miles an hour. It is to be hoped that Martlesham will manage to pass this machine out in time for it to be put on the service this year, as Handley Page Transport have already been obliged to refuse passengers owing to a shortage of flying stock.

The Daimler Airway is now running more smoothly, and Col. Searle was at the aerodrome on Friday, making a tour of the offices and hangars of that firm. The erection of the dynamometer for testing the "Lions" in the Daimler D.H. 34's is still uncompleted, although a water-tower has made its appearance above the shed, and a miniature railway has been laid down from the hangar to the dynamometer shed.

Popularity of the French "Goliath"

MORE and more "Goliaths" are being put on the service by the French companies. This machine appears to be the only really commercial proposition that the French have turned out as yet, and both the French companies are using it in increasing numbers. One day during the week there were four of these giant machines at Croydon, and the "C.A.T.O." was hard put to it to find shed accommodation, one of them having finally to be housed in the Handley Page shed.

Parcels by Air from Morocco

THE Messageries Aériennes have received a parcel by 'plane from Paris which was despatched by air from Morocco. It travelled by air between Casablanca and Toulouse, from there to Paris by train, and on to London in one of the M.A. machines. The parcel contained overcoats—though why overcoats should come from Morocco nobody has yet been able to explain.

The M.A. have now two of their own vans for parcels collection and delivery, painted the firm's own particular shade of brown. Their early-morning newspaper service from Paris has been maintained with considerable regularity, but the service to Paris has suffered from interruption owing to the prevailing northerly winds, which have blown the London smoke across the aerodrome at Croydon, seriously impairing visibility in the early hours.

The installation of wireless telephones is causing considerable trouble and anxiety to the foreign companies. The apparatus supplied to them is not apparently up to the standard of British sets. No foreign machine, in fact, seems as yet to have had a wireless set which was satisfactory, although several have been tried. It has been suggested that British sets might be supplied to foreign companies through Marconi ramifications in various countries. The air transport people are very anxious, now, to provide their machines with wireless, but naturally they are not keen on paying for apparatus which is useless.

Fresh Road Transport Arrangements

A NEW motor-car firm for the conveyance of passengers between London and the aerodrome has made its appearance. It is employed by the K.L.M. and the Messageries to handle the road transport of their passengers. If there is anything in a name this one should be lucky, as the motor firm rejoices in the title of "The Black Cat" Motor Company. Each car has, in fact, a black cat on its radiator.

Another regular user of the airways has come into the limelight this week. A lady dressmaker, with an exclusive clientèle in the West-end, is now in the habit of visiting Paris by air each week in order to keep in touch with the latest vagaries of fashion. So regular have her aerial trips become that the Grands Express, upon whose machines she always travels, have come to regard her as a mascot.

The Surrey Flying Services are now getting an increasing number of joy-riders, and Capt. Muir is quite busy fixing up arrangements to provide flying facilities at country fairs and fêtes. This company is hoping to have in operation, shortly, several machines for air taxi work.

A Cairo-Baghdad Air Service Testimonial

MR. MONTAGUE BELL, managing directing of *Near East*, who left Cairo on March 6, by air mail for Baghdad, has since returned, states *The Times* Cairo correspondent. He had an adventurous voyage, which was delayed by several false landings.

Mr. Bell could not speak too highly of the ingenious method by which this newest air mail route is marked and the organisation which combined to eliminate the perils of a

journey of 500 miles over a trackless desert. His experiences showed him what grit and endurance the maintenance of the navigation of this route demand, and the keenness and pluck with which the Air Force carries out the mail duties. He had opportunities of gauging the moral effect that this service exercised on the peoples of the regions traversed, which augurs well for the success of the experiment which is about to be introduced in the direction of entrusting the Air Force with the military control of Iraq.

ROYAL AERONAUTICAL SOCIETY NOTICES



Students' Section.—The following revised programme has been arranged:—

Friday, April 28.—Library of Royal Aeronautical Society, 6.45 p.m. Student's paper (postponed from March 3). "Some Notes on Commercial Aircraft," by Stanley H. Evans. Mr. H. P. Folland in the Chair.

Saturday, May 6.—Visit to the de Havilland Aircraft Works, Edgware. Meet at Works, 10 a.m. 'Bus leaves Kilburn Park Station (Bakerloo Tube) at 9.30 a.m.

Wednesday, May 31.—Visit to the Royal Aircraft Establishment, South Farnborough. Meet at 8.40 a.m. for special tickets at Booking Office, Waterloo Station (L. and S.W.R.), for 9 a.m. train.

Saturday, June 3.—Visit to the National Physical Laboratory, Teddington. Meet at 9.15 a.m. for special tickets at the Booking Office, Waterloo Station (L. and S.W.R.).

Students are requested to give in their names *immediately* for the visits they wish to attend in order to obtain cheap travel facilities. The Hon. Secretary will meet Students at places and times mentioned for issue of these tickets.

W. LOCKWOOD MARSH, Secretary

THE INSTITUTION OF AERONAUTICAL ENGINEERS



By the courtesy of Mr. F. R. Simms a visit was paid on April 12 by the members of the I.A.E.E. to the works of Simms Motor Units (1920), Ltd. The whole process of manufacture of the Simms Magneto was seen, from the raw materials to the finished product; the use of hot

brass pressings and die castings was explained in detail. Note was especially made of the various testing and inspection methods at every stage of manufacture, more particularly in regard to armatures and condensers. Some interesting devices were shown in the laboratory for making mechanical and heat tests on moulded insulation. The testing of magnets was demonstrated, and the very high magnetic qualities of those made in this country noted. A short visit was also made to the magneto repair works. Repairs to all makes

of magnetos are carried out in a very systematic manner, the same care and testing methods being applied as with the new magnetos.

Fixtures.

April 28, 6 p.m.—Paper, "Some Unsettled Problems of Aeroplane Design," read by Capt. Sayers, Engineers' Club, Coventry Street.

May 10, 2.30 p.m.—Visit to the National Physical Laboratory, Teddington. The number of the party is limited to 15. Tickets must be obtained from the Secretary of the Institution. Members should apply for their tickets early.

May 25, 6 p.m.—Paper, "The Seaplane's Place in Aviation," read by Maj. Hume, Engineers' Club, Coventry Street.

June 7, 3 p.m.—Visit to the Aeronautical Section of the South Kensington Museum.

June, date to be announced.—Visit to the Croydon Aerodrome.

CORRESPONDENCE

LIFEBELTS.

[2054] The question of lifebelts for use in commercial aircraft was considered at a meeting recently held in the City, and the unanimous opinion expressed was that the present type is not satisfactory, and is dangerous unless used intelligently.

What appears to be wanted is a compact and light life-saver which is entirely foolproof and small in size.

This would appear to be a fruitful avenue of research for the inventive genius of many of your readers, and I should be obliged if you would give this matter publicity.

Yours faithfully,

H. R. GILLMAN,

Secretary, Lloyd's Aviation Record

53, Cornhill, E.C. 3

April 22, 1922.

Marseilles-Monaco-Marseilles Race

This French seaplane contest was run off on April 19, when six naval and two civilian pilots took part. M. Eynac, Under-Secretary of State for Aeronautics, evinced the keenest interest in the event, and had flown, in a Goliath from Paris, to Marseilles in 5½ hours' flying time a couple of days previously, in order to be present at the start and finish. The finish found M. Poirée, on a 135 h.p. Clerget-Caudron, the winner in 5 hours 1 min., Brou on a Farman being second in 8 hours 14 mins.

The Zeebrugge Annual Reunion

At the reunion dinner on St. George's Day (April 23), at the Café Royal, of officers who took part in the naval operations of April 23 and May 10, 1918, which resulted in the blocking of the harbours of Zeebrugge and Ostend, about 100 officers from the Royal Navy, Royal Marines, Royal Air Force, Royal Naval Reserve, and Royal Naval Volunteer Reserve were present, including:—

Commander A. Cooper-Key, Maj. E. Bamford, V.C., D.S.O., Capt. Sir Ion Hamilton Benn, D.S.O., M.P., Lieut. J. C. Keith Wright, D.S.C., Lieut.-Com. F. J. Lambert, Maj. T. F. V. Cooke, D.S.O., Commander F. E. B. Haselfoot, R.N., Lieut.-Com. L. S. Chappell, D.S.O., Lieut.-Com. P. T. Dean, V.C., M.P., Lieut.-Com. G. H. Drummond, V.C., Admiral the Hon. Algernon Boyle, Capt. H. O. Oliphant, R.N., and Air-Commodore A. L. Lambe, D.S.O.

It is intended that these dinners shall be held on St. George's Day in each year. The hon. secretary to the Dinner Committee, Lieut. J. C. Keith Wright, D.S.C., 59, Mark Lane, E.C. 4, will be glad if any officer who has not been notified of

these arrangements will communicate with him. As announced last week, R.A.F. officers should address themselves to Air-Commodore C. L. Lambe, Air Ministry.

Italian Air Contests

DETAILS are now available from the Italian Aero Club regarding the Piedmont Grand Prix International Contest. Forty thousand lire will be handed to the firm entering the winning machine, and 10,000 lire to the pilot. The contest will take place in the last week of June, over a circuit Turin-Coni-Alessandria-Novare-Biella-Turin, a distance of about 220 miles, to be covered three times. Machines will be judged on their commercial utility, cargo carried, petrol consumed, commercial speed, and minimum speed. Entries should be sent to the Società Aviazione, Torino, Galleria Nazionale, Scala B, by June 15, at the latest. Each entry must be accompanied by an entrance fee of 1,000 francs, half of which will be repaid to firms entering machines which leave the starting line.

Altogether, about eleven Italian aeronautical meetings have been announced for 1922, from May to October, including the Schneider Cup at Naples. In order to encourage foreign entries for the International events, the Italian Ministry of Finance has consented to exempt foreign machines participating in aeronautical races which will take place in Italy during the current year from Customs Duty during their temporary importation.

Institute of Transport

FROM May 17 to 20, a Congress of the Institute will be held in London, when suitable papers will be read and discussed. A very attractive round of items has been arranged, and included in this programme are a visit, on May 18, to the works of Messrs. D. Napier and Son, Ltd., at Acton, and the Aviation Works of Messrs. Vickers, Ltd., at Weybridge. On May 19, the members go to the Croydon Aerodrome. The absence of an aviation paper from the Congress is due to the fact that an exhaustive and valuable paper was read before the Institute by Sir Henry White-Smith as recently as February 13 last. The Institute cordially recognises the future position of Aviation in Transport, and the indefatigable Hon. Secretary, Mr. H. E. Blain, in this respect, points out that "it is the desire of the Institute that aviation shall be given the prominence to which it is entitled, and it might not be out of place to mention that those engaged in aviation circles are eligible for membership, and, in view of the comparative infancy of this branch of transport, special consideration will be given to applications for membership."

Further particulars can be obtained from Mr. Blain by those interested at the Institute of Transport, 15, Savoy Street, Victoria Embankment.

THE RITH SEMI-RIGID DIRIGIBLE

APART from the terrible loss of life, the recent regrettable accident to the "Roma" airship was particularly unfortunate in that much valuable data relating to the capabilities of the larger, semi-rigid type of dirigible would have been forthcoming had the series of tests planned for this ship been carried out. As we have remarked in *FLIGHT* before, it must be admitted that theoretically the semi-rigid type as compared with the rigid type of airship presents many favourable characteristics from the commercial service aspect. The accident to the "Roma," it should be pointed out, does not necessarily indicate a failure of type, any more than the wreck of the "R.38" proved that the rigid type of airship is deficient. At any rate, the semi-rigid as a type should certainly be the object of further investigation and development.

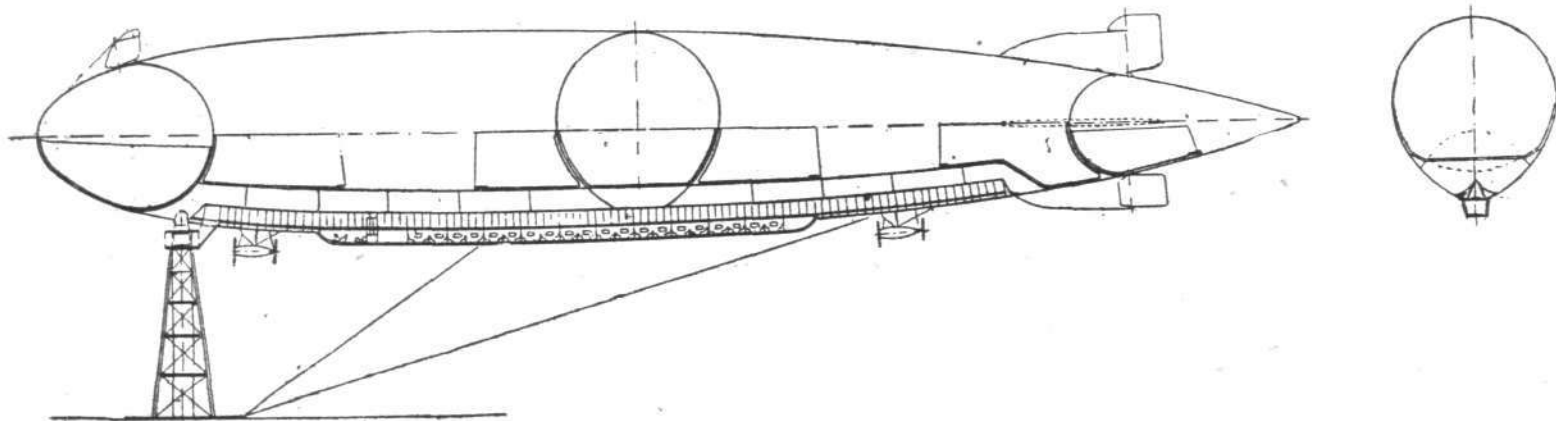
In a recent issue of our American contemporary *Aerial Age* there appeared an article by William Knight, M.E., on an interesting type of semi-rigid, designed by Léon Rith—a French engineer, for many years director of the Eiffel Laboratory—and we give herewith some extracts from the article in question describing this dirigible.

In a great inclination of the axis of a dirigible over the horizontal, which might be produced by a number of causes without always having the time to correct them, the tension in the gas-bag at the end which is more elevated is greatly increased. Furthermore, if the air ballonets are partially full, the gas has a tendency to rush towards the elevated end of the envelope, thus giving rise to sudden blows which are so much more powerful as the cubature of the airship is larger. We thus have new stresses in the envelope which are added to the static stresses due to the inclination of the

in the partition ballonnet can be slight, and is useful only in the case of sudden changes of the direction of the axis of the dirigible with respect to the horizontal.

In order to stabilise the nose of the dirigible, Mr. Rith's project provides automatic stabilising planes each rotating around the axis perpendicular to the direction of the relative wind, and located at the front end of the dirigible. The automatic operation of each plane is produced by a windmill.

The axis of rotation of each stabilising plane and the axis of the corresponding windmill are connected to each other by an articulated parallelogram or by a cable passing over pulleys of slightly different diameters. These automatic control planes may be very small, due to the fact that they are located on the front of the dirigible, which renders their action a good deal more powerful than the control planes placed on the rear. It should be easy to calculate the mechanical attachments of these planes so as to make them sufficiently strong. Under these conditions the dirigibles shall be able to advance in the air without deviating from the straight route, due to the fact that its inertia is considerably larger as compared to the inertia of the automatic stabilising planes. In order to prevent the action of these automatic control planes in front of the dirigible from interfering with the action of the rudders on the rear, it shall be sufficient to arrange a cable transmission leading to the pilot pit which will allow the pilot to act at the same time both on the front and the rear planes simultaneously, the motion of the control planes in front of the airship being the reverse of the motion of the corresponding rear planes. In this way the dirigible can turn more rapidly and can ascend or descend,



The Rith 52,000 Cubic Metre Semi-Rigid Dirigible.

airship on the horizontal. The transverse gas partitions do not help much under these conditions, because they will deformate, and their deformation cannot entirely be prevented by the use of cables without hindering the use of the ballonnets.

Again, a dirigible which is advancing at a certain speed in the air is subject to the same condition as if it were kept stationary in a strong wind. Under these conditions it is almost impossible to keep the axis of a non-rigid dirigible always in the direction of the wind. As soon as a movement of a rudder or any other condition slightly changes the direction of its axis in relation to the direction of the wind, the action of the wind will have a tendency to still further increase the angle between the axis of the dirigible and the direction of the wind. The result is that the dirigible follows an unstable route which must always be corrected by the rudders. Thus, unless the envelope is subjected to relatively high internal pressure it must necessarily bend, and the dirigible will be subject to some snake-like movements in its flight.

In order to be able to build dirigibles of the non- or semi-rigid type with a large cubature, we must devise some means of giving the dirigible a sufficient degree of rigidity, and also we must stabilise its nose. In the Rith dirigible (see illustration) the rigidity is obtained by placing in the middle of the ship a bi-convex gas ballonnet in which the gas pressure is maintained slightly superior to the external gas pressure on each side of it. In this way the two sides of the ballonnet are under pressure, and in the case of a rapid inclination of the axis of the dirigible over the horizontal, either one side or the other is ready to resist the impact of the gas. At the same time movements of large masses of gas are prevented. In addition to containing hydrogen this central partition ballonnet also contains an air ballonnet. The excess pressure

preserving always the horizontal position. When the dirigible strikes a transversal wind, the front control planes automatically accomplish the necessary manoeuvring for keeping the ship in the desired direction.

It is claimed the new design by Rith (if its practical realisation shall prove to be successful) allows to build non-rigid dirigibles of large cubature and great speed of a simple and economical construction and easy operation, without increasing either the weight or the air resistance to any appreciable extent. The illustration gives the outline of a 52,000 cubic metre dirigible with helium compartments designed by Rith. Only one central partition ballonnet has been considered necessary for this design. Two other similar ballonnets are located at both ends of the ship, the one at the front end being subject to a pressure slightly above the aerodynamic pressure prevailing at that point in flight. The rear ballonnet, being under pressure, offers the advantage of providing a better support for the control planes. The length between either the front or the rear ballonnet to the centre ballonnet, is not larger than the length of a small non-rigid dirigible. If more than one ballonnet at the centre shall be needed, this can be done without increasing the weight to any appreciable extent. In a military dirigible it would be desirable to have, instead of one central partition ballonnet, two of them placed on each side of the centre of gravity. This would allow the throwing of heavy bombs without any danger. These two partition ballonnets would not in any way prevent the establishment of static equilibrium by using double air ballonnets.

Two other particulars of this design are worth mentioning. One is the carriage placed at the front end of the ship, moving on a rail around the mooring mast. This it is anticipated will reduce the vertical oscillations of the ship when it is moored

and allow unloading rapidly without losing gas. (See illustration.)

The other particular of this design is the provision made for using helium in a series of compartments located above the passengers' cabin and all other places subject to fire risks. In the illustration is given the transversal section of this balloon when helium compartments are used at the bottom. The surface separating the hydrogen and the helium shall consist of two light fabrics; the lower one has some holes in

it, the upper one is gas-tight and of a larger surface so as to allow for the expansion of the helium. The upper dotted line shown in the transversal section in Fig. 1 shows the position of this separating surface in the expanded position. The lower dotted line shows the position of the partition if, due to an accident, a helium compartment should break, letting the helium escape. Altogether the volume of the helium used in this design will be about one-tenth of the volume of hydrogen used.

PERSONALS

To be Married

The engagement is announced between Capt. A. G. A. HODGES, Northampton and R.A.F., elder son of the Rev. and Mrs. H. A. Hodges, of the Vicarage, Barrow-on-Trent, and EILEEN, only daughter of Mr. and Mrs. JAMES STIRLING STEWART, of Ayrshire, and the Argentine.

Death

Lieut.-Col. FRANCIS MAUDE-ROXBY, whose death was briefly recorded last week, and who was the fourth son of the late Rev. Henry Meux Roxby, Vicar of Buckden, Huntingdonshire, married, in 1912, Louise, second daughter of the late John Linton, of Stirtloe, Buckden. Col. Maude-Roxby had a distinguished and varied career in the War. He joined the British Expeditionary Force in France in April, 1915, when he was attached to the Suffolk Regt., with whom he served in the trenches. Later he was transferred to the Balloon Section of the R.A.F., taking out a section to France in March, 1916. He was promoted major (squadron-commander) in December, 1916, and lieutenant-colonel (wing-commander) in November, 1917. As wing-commander he was able to render national service of the highest importance, for under Maj.-Gen. E. B. Ashmore he was directly responsible for the organisation and construction of the balloon defences of London. In this work he had approximately 3,500 officers and men under his command. In August, 1918, he again went out to France in command of a wing, and remained there till February, 1919. Col. Maude-Roxby was four times mentioned in

dispatches, and was awarded the Order of the British Empire, the Distinguished Flying Cross and the Legion of Honour, the last being given in recognition of important services rendered at the battle of Vimy Ridge.

The funeral took place at All Saints' Church, Marlow, on Easter Eve, and at the same time a memorial service was held at St. Mary's Church, Buckden.

Death of Mrs. C. J. Fairfax Scott

We regret to learn of the death of Mrs. Fairfax Scott, wife of the hon. organiser and secretary of the Imperial Air Fleet Committee, who died in London last week. She designed bronze mascots for all the different aeroplanes (13 in number), the presentations of which were organised by her husband, from eleven different towns of the United Kingdom to the six Dominions, including India. These designs are symbolic of the national sentiment of each of the Dominions. The King accepted a reproduction of the mascot of the Leicester-Canada aeroplane as a souvenir of the farewell flight of the machine to Leicester on the occasion of His Majesty's visit to the town. Mrs. Fairfax Scott also initiated and designed embroidery work for Dominion flags of all the Imperial Air Fleet aeroplanes. At Taplow Court hangs a Union Jack representing, in embroidered lines and figures, the record of all the Imperial Air Fleet presentation aeroplanes, which flag was presented to Lord and Lady Desborough by Mr. and Mrs. Fairfax Scott on October 27, 1918, on the occasion of the presentation of the City of Glasgow aeroplane to Canada.

IN PARLIAMENT

Airships' Gas.

CAPTAIN BOWYER, on April 12, asked the Parliamentary Secretary to the Admiralty whether his attention has been drawn to the invention of a process for manufacturing a non-inflammable gas, of approximately the same lift as hydrogen, called currenium; and, in view of the fact that it is reported that this gas can be produced much more cheaply than helium, will the Admiralty take the necessary steps to obtain full information, in view of the greatly increased value that the practical application of such a gas would make to airship development?

Mr. Amery: The Admiralty is watching progress in experiments with non-inflammable substitutes for hydrogen as a filling for airships, but the active pursuit of this question will, no doubt, be considered by the Secretary of State for Air should he decide to re-establish an airship service.

Aircraft Carriers

REAR-ADMIRAL SUETER asked the Parliamentary Secretary to the Admiralty whether he is satisfied that the Air Ministry have provided for the requirements of the Navy suitable machines for flying on and off the decks of the aircraft carriers; and whether a sufficient number of machines have been ordered by the Air Ministry to meet all reasonable naval requirements?

Mr. Amery: The problem of flying aircraft from and on to carriers is still in its infancy. Consequently, of the aircraft supplied up to the present by the Air Ministry, some types have been more successful than others. So far as the larger types are concerned, the matter is still in the experimental

stage, but it is hoped that the new machines now under construction by the Air Ministry will prove suitable. With regard to the second part of the question, the provision of aircraft to meet naval needs which was originally agreed on between the two Departments for this financial year, has recently been considerably reduced as the result of the further economies required of the Air Ministry by His Majesty's Government.

Captain Viscount Curzon: Will the Navy secure enough aeroplanes for the carriers now under construction?

Mr. Amery: That would come into the Estimates for subsequent years.

Imperial Airship Service

CAPTAIN BOWYER asked the Parliamentary Secretary to the Admiralty whether his attention has been called to the projected airship service to Australia and the Far East; and, in view of the value of such a fleet of airships with bases throughout the Empire as an auxiliary reconnaissance force in time of war, what is the attitude of the Admiralty to this scheme?

Mr. Amery: The Admiralty view on the question of the airship service has already been given in this House. We viewed with regret the decision, for financial reasons, to abandon the existing airship service. That airships, if available in sufficient numbers, would be of great value in naval warfare is undoubted, and the possession in any future war of a considerable number of these craft would certainly be of importance to the Empire. Any development, therefore, of airships for commercial purposes would be welcomed by the Admiralty. The exact manner in which they would be used in war would depend on the circumstances.

Continental Air Couriers

The latest development in aviation is contained in an announcement that an Air Courier Service has just been put into operation between London and Paris. Mr. Ransley S. Thacker, a barrister who has for several years been interested in aviation work, is the one responsible for this new enterprise.

Mr. Thacker travels every other day by aeroplane to Paris, and returns in the same way next day. Shortly he may go to Paris and return on the same day. If the amount of business makes it necessary, and Mr. Thacker states that from his present experience it soon will be necessary, he will employ other couriers, who will be despatched by each of four daily services.

Mr. Thacker is prepared to transact business or to execute commissions of any reasonable nature, and we can imagine many and varied will be the missions which he will be asked to undertake.

Mr. Thacker's offices at Granville House, Arundel Street,

Strand, are open day and night, so that instructions may for urgent reasons be made at any time during the night, and in order to develop this service to the full, special night flying services will, it is proposed, later on be in operation; and in a short time it is hoped to have a Courier Air Service to Amsterdam, with connections to Berlin and Copenhagen, and also to Brussels, a direct service of couriers between London and Marseilles, and from Paris it will be possible to reach the most remote points by air.

The personal nature of this service is its *raison d'être*, and the commercial and legal experience and negotiating ability of its founder should be most valuable assets.

Mr. Thacker's charges vary from six guineas to ten guineas according to the nature of the transaction involved, but in any case it is considerably lower than the cost of sending one's own messenger.

It is shortly intended to open up offices in Paris, so that the business on that side may be developed also.

THE ROYAL AIR FORCE

London Gazette, April 7, 1922

General Duties Branch

The follg. Pilot Offrs. on probation are confirmed in rank.—F. K. Wright; Feb. 28. S. F. Coles; March 4. R. H. Mahon; March 5.
The follg. are restored to full pay from half-pay.—Group Capt. U. J. D. Bourke, C.M.G.; April 10. Flying Offr. T. H. Moon; April 3.

Memorandum

Capt. R. H. Shears (Capt. Shrops. L.I.) relinquishes his temp. commn. on ceasing to be empld.; Oct. 31, 1919 (substituted for Gazette, Oct. 31, 1919).

London Gazette, April 13, 1922

General Duties Branch

J. E. Arnott is granted a short serv. commn. as a Flying Officer, with effect from and with seny. of March 23. F. H. W. Guard, C.M.G., D.S.O., is granted a short serv. commn. for three years on the active list as a Squadron Leader, with effect from and with seny. of April 3. Flying Officer V. Croome is restored to full pay from half-pay; April 1. Flying Officer H. V. Puckridge, D.F.C., to take rank and prec. as if his name appeared in the Air Force List immediately below that of Flying Officer L. G. Harrison (reduction to take effect from March 28). Flying Officer, W. V. N. Grant relinquishes his short serv. commn. on account of ill-health contracted on active serv., and is permitted to retain the rank of Lieut.; April 5. Flight Lieut. E. L. Johnston, A.F.C., is transferred to the Res. Class B; April 10. Flying Officer W. A. N. Appleford resigns his short serv. commn.; March 28. The grant of a short serv. commn. to A. K. Crowther notified in Gazette, Jan. 13, is cancelled, with effect from April 1.

Stores Branch

Flying Officer J. A. Allen is placed on the retired list on account of ill-health contracted in the Service, and is granted the rank of Capt.; April 12. The temp. commn. of Flying Officer H. A. Lotherington is terminated on cessation of duty; April 11.

Medical Service

R. H. Wace, M.B., is granted a temp. commn. as a Flight Lieut., with effect from and with seny. of March 28.

Memoranda

Lieut. S. J. Croad relinquishes his temp. commn. on ceasing to be employed, and is permitted to retain his rank; March 25. Lieut. J. Sharman is deprived of permission to retain his rank, on conviction by the Civil Power; Feb. 9.

London Gazette, April 14, 1922

General Duties Branch

Wing Comdr. H. A. Williamson, C.M.G., A.F.C., is placed on half-pay, Scale A; April 3. Wing Comdr. R. G. D. Small is restored to full pay from half-pay; March 14.

London Gazette, April 18, 1922

General Duties Branch

Flying Offr. A. H. Flower is granted a permanent commn., retaining his present substantive rank and seny.; Oct. 24, 1919. Gazette, Oct. 24, 1919, appointing him to a short service commn., is cancelled.

The following are granted short service commns. as Pilot Offrs. on probation, with effect from, and with seny. of, the dates indicated:—H. S. C. Bassett, A. E. B. Bateman, R. F. Daniell, D. R. Dawson, B. C. Duke, R. B. Fleming, E. J. Heaven, L. P. Hirsh, P. J. A. Hume-Wright, J. C. Lindsay, M.C., H. W. Pierce, S. H. G. Trower, E. S. C. Vaughan, M.C., G. Wake, A. W. B. Walker, M. Wiblin, J. B. Wilson, L. Young; April 1. J. B. Rose; April 3. Flight Lieut. H. M. Massey, M.C., is placed on half-pay, Scale B, from Feb. 16 to Feb. 23 inclusive.

The short service commn. of Pilot Off. on probation J. Dawson is terminated on account of ill-health; April 19. Flight Lieut. C. C. Clark resigns his short service commn., and is permitted to retain rank of Capt.; April 1.

Stores Branch

The short service commns. of the following officers are terminated on cessation of duty:—Flying Off. on probation W. L. Price; April 9. Pilot Off. on probation R. G. W. N. Tinley; April 11.

Medical Service

Flight Lieut. C. W. T. Baldwin relinquishes his temp. commn. on ceasing to be empld., and is permitted to retain rank of Capt.; March 24.

Chaplains' Branch

The Rev. T. Browne, D.D., Ph.D., is granted a short service commn. as a Chaplain (R.C.), with the relative rank of Squadron Leader (Jan. 11).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the R.A.F. are notified:—

Air Commodore B. C. H. Drew, C.M.G., C.B.E., from Headquarters Middle East Area (Middle East Area) to command Egyptian Group Headquarters (Middle East Area). 1.1.22.

Group Captain P. F. M. Fellowes, D.S.O., from Palestine Group Headquarters (Middle East Area) to Headquarters Middle East Area (Middle East Area). 1.1.22.

Wing Commanders.—R. P. Ross, D.S.O., A.F.C., to R.A.F. Base Leuchars (Coastal Area) for Air Staff Duties with C.-of-C. Atlantic Fleet, in H.M.S. "Queen Elizabeth." 12.3.22. R. E. C. Peirse, D.S.O., A.F.C., from No. 29 Group Headquarters (Coastal Area) to R.A.F. Staff College (Inland Area). 1.4.22. W. H. Primrose, D.F.C., from No. 6 Flying Training School (Inland Area) to School of Technical Training (Men) (Inland Area) (Supernumerary, on disbandment of No. 6 Flying Training School). 1.4.22. H. L. Reilly, D.S.O., from No. 6 Flying Training School (Inland Area) to School of Technical Training (Men) (Inland Area) (Supernumerary) on disbandment of No. 6 Flying Training School. 1.4.22. H. A. Williamson, C.M.G., A.F.C., from Air Ministry (Directorate of Equipment) to R.A.F. Depot (Inland Area) (Supernumerary). 1.4.22. P. K. Wise, C.M.G., D.S.O., to command R.A.F. Depot (Inland Area). 3.2.22.

Squadron Leaders.—F. H. W. Guard, to R.A.F. Depot (Inland Area) (Supernumerary) on appointment to Short Service Commission for duty with Armoured Car Company (on formation). 3.4.22. A. J. C. Wigmore, M.B., from No. 45 Squadron (Middle East Area) to Palestine Group Headquarters (Middle East Area) for duty as Senior Medical Officer. 14.3.22. M. Henderson, D.S.O., from No. 216 Squadron (Middle East Area) to command No. 47 Squadron (Middle East Area). 13.3.22. R. S. Overton, from Palestine Group Headquarters (Middle East Area) to R.A.F. Depot (Inland Area) (Supernumerary). 17.3.22.

Flight Lieutenants.—E. F. Turner, from Air Ministry (Director General of Supply and Research) to R.A.F. Depot (Inland Area) (Supernumerary). 1.4.22. J. P. Wells, B.A., from Coastal Area Aircraft Depot (Coastal Area) to Marine and Armament Experimental Establishment (Coastal Area). 2.4.22. V. R. Smith to Research Laboratory and Medical Officers' School of Instruction (Inland Area) on appointment to Short Service Commission. 18.3.22, and to Central Medical Board (Inland Area). 14.4.22. J. R. Howett from Instrument Design Establishment (Inland Area) to No. 207 Squadron (Inland Area) (Supernumerary). 10.4.22. G. H. Reid, D.F.C., from Instrument Design Establishment (Inland Area) to R.A.F. Depot (Inland Area) (Supernumerary) to attend School of Military Administration. 10.4.22. V. H. Tait, from No. 39 Squadron (Inland Area) to No. 4 Squadron (Inland Area) (Supernumerary). 1.4.22. L. W. Hall, from Inspector of Recruiting (Liverpool) (Coastal Area) to No. 5 Flying Training School (Inland Area). 13.4.22. A. W. Clemson, O.B.E., D.S.C., from Inspector of Recruiting (Glasgow) (Coastal Area) to R.A.F. Depot (Inland Area) (Supernumerary). 1.4.22. A. D. Newbury, from Inspector of Recruiting (Birmingham) (Coastal Area) to Inland Area Aircraft Depot (Inland Area) (Supernumerary). 13.4.22. T. Henderson, M.C., A.F.C., from No. 6 Flying Training School (Inland Area) to School of Technical Training (Men) (Inland Area) (Supernumerary). 1.4.22. H. P. Lale, D.S.O., D.F.C., from No. 6 Flying Training School (Inland Area) to School of Technical Training (Men) (Inland Area) (Supernumerary). 1.4.22. W. C. Clark from No. 6 Flying Training School (Inland Area) to School of Technical Training (Men) (Inland Area) (Supernumerary). 1.4.22. J. M. Burke, from No. 267 Squadron (Mediterranean) to R.A.F. Depot (Inland Area) (Supernumerary). 25.3.22. To join 17.4.22. A. T. Cooper from Air Ministry (Director of Equipment) to R.A.F. Depot (Inland Area) (Supernumerary). 1.4.22. R. J. Aherne, M.C., from Headquarters Middle East Area (Middle East Area) to No. 45 Squadron (Middle East Area). 3.3.22. N. H. Medhurst from Headquarters Middle East Area (Middle East Area) to No. 216 Squadron (Middle East Area). 3.3.22. E. L. P. Morgan, from Aircraft Park (Iraq Group) to Aircraft Depot (Middle East Area). 17.2.22. A. Hunter, O.B.E., from Aircraft Depot (India) to R.A.F. Depot (Inland Area) (Supernumerary). 6.3.22. M. H. Butler, D.F.C., from R.A.F. Depot (Inland Area) to Inland Area Aircraft Depot (Inland Area). 5.4.22. R. H. Wace, to Research Laboratory and Medical Officers' School of Instruction (Inland Area) on appointment to Temporary Commission. 28.3.22.

ROYAL AIR FORCE SPORTS BOARD

Inter-Services Boxing Tournament. Championships at Halton Air Station

THE Imperial Services Boxing Association has arranged that for the future each service will, in turn, be responsible for the organisation of the Inter-Services Boxing Tournament in successive years. This year, the responsibility has been delegated to the Royal Air Force Boxing Association, and the competitions will be held at Halton Camp, near Wendover (by permission of Air-Commodore F. R. S. Scarlett, C.B., D.S.O.), on May 3 and 4.

This year, there will be four service entries, Royal Navy, Army, Royal Air Force and Royal Marines, the last-named coming in as a separate service for the first time. The competitions will consist of individual championships for officers (feather, light, welter, middle and heavy weights) and other ranks (all weights). The Inter-Services Team Championship will be gained by the Service securing the highest number of points in the two classes of individual championships.

The contests will take place in a large hangar at Halton Air Station in which seating accommodation has been provided for nearly 4,000 spectators, all of whom will have good views. There will be two sessions, at 2 p.m., and 8 p.m., on May 3, and the finals will be fought at 8 p.m. on the following day.

Halton Air Station is readily accessible from London, and special travelling facilities have been arranged for the finals on the second day.

The Central Band of the Royal Air Force, under the direction of Flying Officer J. H. Amers (Director of Music), the R.A.F. Band, Halton, and the massed drums and trumpets of the R.A.F., Halton, will play during the Tournament.

The tickets for each session range in price (the three sessions at reduced rates) from 1s. to 10s. for ring-side seats. They can be obtained from Messrs. Alfred Hays, 26, Old Bond Street, W. 1, and from all naval depôts, marine barracks, army commands and Air Force stations, or on admittance.

Any enquiries should be addressed to Squadron-Leader J. E. Parkin, M.B.E., Hon. Sec. Imperial Services Boxing Association, R.A.F. Depot, Uxbridge.

SIDE-WINDS

In connection with the Easter Monday Air Races at Waddon, we think it certainly deserves to be put on record that, but for the Aircraft Disposal Company, there might have been no races, or at any rate not the interesting races which did take place. Of the machines belonging to the A.D.C. some were entered by that firm, while in the case of several others only a nominal charge was made to the pilots flying them. Not only so, but the engineers who worked on the machines to get them in racing trim did so without pay, simply for the sport of the thing. Such a state of affairs is highly commendable, and the workers no less than the firm deserve the thanks of all interested in aviation for the share taken in making the meeting a success. That the organisation partly handicapped their efforts is in no way the fault of these enthusiasts, and it is to be hoped that they will not be discouraged by the way in which the race meeting was handled, but will do as well next time, when those responsible for the organisation must do a great deal better.

It is significant of the progress of commercial aviation that the Anglo-American Oil Company has recently installed another filling-point at the London Terminal Aerodrome at Croydon, in what must be record time for work of this nature. This increased facility for supplying aviation spirit has been necessitated by the recent inauguration of the new Daimler Hire, Ltd., Air Service to the Continent.

This new "Golden Pump" installation has a tank capacity of 3,000 gallons, and a unique feature is that the aviation spirit after passing through the pump is propelled through some 250 ft. of supply pipe underground to the required filling point, where it is discharged into the aeroplane tank. The arrangement is such that the details when not in use are stored underground leaving no projection on the surface of the aerodrome. Thus speed of supply is coupled with absolute safety to aeroplanes leaving or arriving.

When it is considered that the storage tank was not lowered into its pit until March 30 last, and that the installation was completed, tested and handed over for use on April 2, it will be realised how exceptionally quick the work was effected. This makes the third "Golden Pump" erected at the Croydon Aerodrome by the Anglo-American Oil Co.

IMPORTS AND EXPORTS, 1921-1922

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; for 1920, see "FLIGHT" for January 13, 1921; and for 1921, see "FLIGHT" for January 19, 1922.

	Imports		Exports		Re-Exportation	
	1921.	1922.	1921.	1922.	1921.	1922.
Jan. ...	4,459	1,152	87,128	76,552	2,285	23
Feb. ...	2,379	567	59,829	69,129	19	1,100
Mar. ...	14	1,471	118,199	166,607	1,565	100
	6,852	3,190	265,156	312,288	3,869	1,223

Germany and Military Aircraft

An announcement was made in Berlin on April 22 upon the above matter to the following effect.—"The Inter-Allied Guarantee Committee which will supersede the Inter-Allied Air Commission on the 5th prox. (on which date Germany, under certain conditions, may resume the manufacture of civilian aircraft) will consist of thirteen Inter-Allied officers and twenty-eight non-commissioned officer and soldiers.

"One of the committee's principal tasks will be to see that Germany observes the rules prohibiting the manufacture of military aircraft. One-seaters of over 60 h.p., air machines which can fly without a pilot, air machines with protective armour, or capable of being equipped with any armament will be considered military. No heavier-than-air machine with full cargo must be able to rise over 4,000 metres; no machine with full cargo at 2,000 metres must be able to travel faster than 170 kilometres an hour. Airships whose cubic content exceeds the following figures will be considered military:—Rigid dirigibles, 30,000 cubic metres; half-rigid, 25,000 cubic metres; non-rigid, 20,000 cubic metres."

THE LONDON AERO-MODELS ASSOCIATION

A VERY interesting meeting was held at Headquarters on Thursday, the 20th inst., over 30 members being present.

Competition No. 3 (for members only), for R.O.G. Duration, limited to enclosed models weighing not less than 8 ozs., any power, loading limit (minimum) 6 ozs. to the square foot for monoplanes and 5 ozs. per square foot for biplanes. To take place on Wimbledon Common at 11 a.m. (start at 11.15 a.m.), May 7. Flights timed from release of propellers. Judges, Mr. A. F. Houlberg and Mr. W. E. Evans. Prizes to the value of 2 guineas for this competition were kindly given by Messrs. W. G. Evans and Sons.

Competition No. 5.—Mr. F. J. Camm's Challenge Cup, value 10 guineas and silver medal. The Cup is won outright by the entrant winning it for three consecutive years.

1. Machines to be of Farman type.
2. Propeller to be placed nearer to the main plane than to the tail.

3. Total length not to be greater than the span (not including protector).

4. Loading limit (minimum) 6 ozs. per square foot for monoplanes and 5 ozs. per square foot for biplanes.

5. Best of three flights.

6. Competition to be held Saturday, June 24, at 4 p.m.

Mr. Camm is making arrangements for this to be held on Messrs. Handley Page's ground, Cricklewood.

Judges will be appointed later.

Entrance fee for non-members, 5s.

Competition No. 7.—Mr. D. A. Pavely kindly offered a prize to the value of three guineas for an Ornithopter Competition. Minimum weight 4 ozs., minimum duration 20 seconds. Further particulars will be published later.

Competition No. 2 was held on Wormwood Scrubbs, on Sunday, the 23rd inst. Over a dozen members entered same, the Judges being Mr. Houlberg and Mr. Wilson. Unfortunately, the weather was very unfavourable for such a competition, the tractor machines having great difficulty in rising off ground.

Mr. Hatfull was first, doing 59½ secs.; Mr. C. Hersom was second with 53½ secs.; and Mr. Bedford third with 49½ secs.

Many members had built new models, the majority of which were of a very interesting design and excellent workmanship. Mr. D. A. Pavely had his compressed air machine out, which was very much admired by the public. Mr. Colebach and Mr. Grey gave an interesting exhibition with their enclosed type machines.

Members are specially requested to meet on Wanstead Flats on Sunday, April 30, at 11 a.m., in order to give a flying demonstration.

Mr. W. E. Evans reports good progress with his propeller testing apparatus, and hopes to have same finished in three weeks' time.

A Research Committee has been formed, the following members having volunteered to serve on same:—Messrs. W. E. Evans, A. F. Houlberg, A. B. Clark, D. A. Pavely and F. J. Camm. Meetings are held at Headquarters, 20, Great Windmill Street, Piccadilly, W.1, every Thursday at 7.30 p.m.

Competition Secretary, Mr. C. A. Rippon, 52, Fairbridge Road, Holloway, N.19.

A. E. Jones, Hon. Secretary, 48, Narcissus Road, West Hampstead, N.W. 6.

FLIGHT

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